

# **Exploring the relationship between network competence, network capability, and firm performance: A resource based perspective in an emerging economy.**

Gert Human<sup>1</sup>  
University of Cape Town, S.A.

Peter Naudé  
Manchester Business School, UK.

Growing attention to business-to-business networks and the demonstrated linkage between firm performance and collaborative efforts within these networks, fuels the continued search for a greater understanding of what is needed to manage in complex business constellations. A key component of this challenge, and the focus of this study, is the competencies and capabilities required at the firm level to engage in meaningful network relationships to enhance performance. Adopting the notion of the resource based view (*RBV*) of the firm, this paper seeks to confirm the distinctiveness of measures of network competencies and capabilities needed to manage within networks in an emerging economy environment. Secondly, the paper considers the relationship between these “resources” and subjective measures of firm performance. The analysis is based on data extracted via a multi-informant mail survey of business managers in South Africa. Confirmatory factor analysis, structural equation modelling and multiple regression analysis were employed to test a conceptual model based on prevailing literature. In addition to providing greater clarity on relational effects depicted in the model, the paper also aims to contribute to scale development and the rich debate on network management challenges.

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<sup>1</sup> To whom all correspondence should be addressed:

School of Management Studies, University of Cape Town, Private Bag, Rondebosch 7701, CAPE TOWN, South Africa  
Tel: +27 21 650 4331, Fax +027 21 689 5770  
gert.human@uct.ac.za

## **Abstract**

Growing attention to business-to-business networks and the demonstrated linkage between firm performance and collaborative efforts within these networks, fuels the continued search for a greater understanding of what is needed to manage in complex business constellations. A key component of this challenge, and the focus of this study, is the competencies and capabilities required at the firm level to engage in meaningful network relationships to enhance performance. Adopting the resource based view (*RBV*) of the firm, this paper seeks to confirm a measure of network competencies and network capabilities needed to manage within networks, in an emerging economy environment. Secondly, the paper considers the relationship between these “resources” and subjective measures of firm performance. The analysis is based on data extracted via a multi-informant mail survey of business managers in South Africa. Confirmatory factor analysis, structural equation modelling and multiple regression analysis were employed to test a conceptual model based on prevailing literature. The findings suggest that both measures can be considered valid and reliable after some refinement. However, it was observed that network capability demonstrated a significant relation with subjective measures of firm performance while network competence did not. In addition to providing greater clarity on relational effects depicted in the model, the paper also aims to contribute to scale development and the rich debate on network management challenges.

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## **Introduction**

Attention to networks is powered by the notion that firms cannot survive and prosper solely through their individual efforts, and that each firm’s performance depends upon the activities and performance of others. Hence, the nature and quality of the direct and indirect relationships that a firm develops with its counterparts (Batt and Purchase, 2004) is fundamental to managing in complex networks. This raises the question of what it is that any firm needs to do well, or needs to be capable of doing, in order to derive benefit from such networked relationships. We argue that researchers should be able to contribute to this debate by considering the relationship between network competence, network capability and firm performance. Moreover, we also postulate that this idea should be extended to emerging markets as various authors (Ritter, 1999, Parkhe et al., 2006) conceded that network thinking is a key factor in shaping global business architecture.

The concept of network competencies and capabilities is derived (at least in part) from the Resource Based View (*RBV*) of the firm, a major pillar in the strategic management literature. We therefore partially employ Resource Based Theory (*RBT*) to construct a development path for network competencies and network capabilities. Finally, we test the usefulness of existing constructs to investigate the relationship between network competencies, network capabilities and firm performance in an emerging market setting. Our research shows that although these measures may be considered valid and reliable, the strength of their relationship with firm performance is different.

## **Resource based view and business networks**

Despite criticism (Baraldi et al., 2007), analysing company resources and capabilities in order to select strategies that are most likely to offer good returns, seems to remain a key focus in management literature. This is grounded in the *RBV* of the firm and has received considerable attention during the last decade. Hooley et al. (2001) argues that the resource-based perspective

emerged to counter the excessive determinism of the Porterian view of competition, and that it emphasizes the importance of key resources in achieving a competitive advantage (Fahy and Smithee, 1999, Fahy et al., 2005, Teck-Yong, 2005). However, researchers such as Camelo-Ordaz et al. (2003) note that a company's achievement of a sustainable competitive advantage depends not only on resources and capabilities as its competitive architecture, or on the consistency of these with its strategy, but also on the degree of fit between its resources and the set of critical strategic industrial factors. However, some key ideas behind of RBT appear to present scholars with some challenges.

According to Baraldi et al., (2007) the resource-based view of competitive advantage operates on the assumptions that firms are heterogeneous in terms of their control of important strategic resources, and that resources are not perfectly mobile between firms. This, they argue, presents a relaxation of the assumptions that firms do not differ in their control of strategic resources. In terms of competitive advantage it is noted that the RBV would argue that a firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors, and when these other firms are unable to duplicate the benefits of this strategy. In short, for a resource to be a potential source of sustained competitive advantage, it must be valuable, rare, inimitable, and non-substitutable. This suggests that the RBV proposes that sustained competitive advantage can only be developed if it controls physical, human or organizational assets that are valuable, rare, inimitable, and non-substitutable. In comparing these views with the key perspectives from the IMP Group, Baraldi et al. (2007) noted some commonalities and differences with the RBV:

- Assuming that relationships and networks are considered to be resources themselves, then the relationships and networks approach to strategy has something in common with the RBV in that the current resources of the firm are considered to be the key factor in determining its strategic behaviour. However, while the RBV focuses on three principal categories of resources, the relationships and networks' approach identifies the firm's portfolio of relationships and its network of positional resources as the key factors in strategy formulation (Foss, 1999, Ford and Hakansson, 2006). Network literature (notably from IMP scholars) seems to include a significant broader view of resources and of the context within which they are considered.
- Another difference relates to the ability of a firm to act independently – a key assumption in RBT. Under this assumption the firm is viewed as being independent of other actors and can therefore seek to manipulate resources optimally in the search for competitive advantage. Referred to as the “Myth of independence” by Ford and Hakansson (2006), who argue that true independence in a network is not possible as firms have a restricted view of the surrounding network. Thus, they are limited in their freedom to act independently because with the outcomes of their actions being dependent upon the actions of other firms within the network. This suggests that no matter how strategically capable the organization may be, its own performance is linked to the performance of others in the network. Arguably, an organization's performance is therefore largely dependent on those with whom it interacts.

Similarly, Competence-based theory (Hunt and Lambe, 2000) is also an "internal factors" theory and it complements RBT because it explains how firms develop strategies to exploit resources in their quest for competitive advantage. In fact it is argued that Competence Based Theory (CBT) is a logical extension of RBT. Numerous theoretical and empirical articles (Ritter and Gemünden, 2004, Ritter and Gemünden, 2003, Ritter, 1999, Awauh, 2001, Harland and Knight, 2001, Savolainen, 2002, Ritter et al., 2002, Prahalad and Hamel, 1990, Harmsen and Jensen, 2004, Meyer, 1991, Bush et al., 2001, Snow and Hrebiniak, 1980, Atuahene-Gima, 2005, Sanchez and Heene, 2004, Winter, 1988, Hamel and Heene, 1994) have been developing CBT and the idea of core competencies by

Prahalad and Hamel (1990) received specific attention. Core competences (1) provide access to a wide variety of markets, (2) make a significant contribution to customers' perceptions of benefits, and (3) are difficult for rivals to imitate. In addition, a firm must manage its competence(s) as a system and avoid excessive focusing of managerial attention on developing and managing a 'single competence' judged by some criteria to be “core”. Also, it is suggested (Hunt and Lambe, 2000) that CBT employs assets and capabilities in the description of competencies – further blurring the borders between these concepts.

Although Baraldi et al.'s (2007) analysis points at the challenges of RBT and CBT to compliment network approaches, it simultaneously recognises the validity of employing these theories in a network context. If network mobilizing incorporates the network competences and capabilities required for processes of internally generated change, researchers should attempt to establish what tools, technologies and skills are necessary to underpin these. They concluded that little attention has been paid to the question of whether more successful organizations have better mechanisms for managing their external relationships and networks. It is then noted that that scholars need know whether organizations that do achieve consistently above-average economic success, have better internal resources and competences or capabilities for handling external relationships in the surrounding network. Our paper attempts to contribute towards bridging this gap.

## **Competencies and Capabilities**

According to Heene and Sanchez (1996), a competence is defined as an ability to sustain the coordinated deployment of assets in a way that helps a firm achieve its goals. Defined as the deployment of assets in a way that helps a firm achieve its goals, it is viewed as a resource, even though it is practically an “intangible entity” that allows a firm to compete more effectively. According to Hunt and Lambe (2000), one may view a competence as being a higher-order resource that is a distinct combination of more basic resources.

In turn the definition of capabilities appears to have followed a different path which originates with the notion of “marketing assets” (Hooley et al., 2001) and includes customer based assets, distribution or supply chain based assets, internal assets and alliance based assets. Notably present in this collection are a number of “marketing assets” that relate strongly to networks and the firm's ability to operate in network environments. Furthermore, marketing assets are distinguished from “Marketing Capabilities” – which is referred to as the “glue” that binds “marketing competencies together and facilitates their effective deployment in the market place. However, the varied way in which the concepts of competencies and capabilities are use is demonstrated when these authors (Hooley et al., 2001) employ the seminal work of Day (1994) to classify capabilities as Outside-In (*those skills and competencies of the firm that help it to understand changes taking place in its markets together with those that enable the firm to operate more effectively in the market place*), Inside-Out processes (*these focus on the firm's internal resources and capabilities such as financial management, cost control, technology development and integrated logistics*), and Spanning capabilities (*those skills and competencies that serve to integrate inside-out and outside-in capabilities. They typically require both understanding of market requirements and internal competencies to fulfil them*). In providing further support for the idea of network capabilities as in the context of this paper, Day also refers to a set of capabilities for the purposes of competing, and in this regard specific reference is made to “networking capabilities” as suggested by Cravens and Piercy (1994).

In a more recent paper Hooley et al. (2005) draw a distinction between market-based resources and marketing-support resources. Market-based resources are those that can immediately be deployed in the market place to directly create or maintain competitive advantage. Marketing-support resources, on the other hand, serve primarily to support marketing activities and hence contribute indirectly to competitive advantage. The authors confirm that *market-based resources* of any organization will be the outside-in capabilities and then note that a second set of market-based resources lie in the reputation and credibility of the organization among its customers, suppliers, and distributors, whilst a third and fourth set relates to the firm's ability to successfully innovate in the marketplace and human resources, respectively. The reference to reputation and credibility amongst customers, suppliers and distributors in the second set of market-based resources, appears to imply recognition for the network in which a firm may operate. These might be viewed as network resources. Furthermore, it is proposed that underlying market-based resources are two main sets of *marketing-support resources*. These include (firstly) the marketing culture of the organization; and (secondly), the capabilities of its managers to lead, manage, motivate, and coordinate activities. Hooley et al. (2005) then propose that *marketing-support resources* affect the level and quality of the market based resources of the firm and that these in turn affect overall financial performance.

This constitutes an attempt to consider the effect of resources (including competencies and capabilities) on firm performance. Moreover, in their consideration of performance a distinction is made between financial performance and market performance. This separation appears useful to our consideration of firm performance. Hooley et al.'s (2005) research demonstrated how marketing resources impact on performance outcomes, with both direct and indirect relationships being found. Although these linkages may appear to be useful for establishing the relationship between marketing resources and firm performance, no specific mention of network competence and network capabilities was made. Hence we turn our attention to these constructs.

### **Network competencies and capabilities**

Research by Golfetto and Gibbert (2006) noted that existing work on the role of competencies in industrial marketing firstly focuses on established approaches to deal with competencies as inputs to organizational processes and the consequent attempts to establish how marketing competencies such as customer relationship management, channel design, etc. lead to superior financial returns. Secondly, it also focuses the marketing of competencies as a source for customer value. Importantly it is acknowledged, similar to Baraldi et al. (2007), that the resource-based view has become influential in explaining the origin of competitive advantage and differences in profitability, but emphasized resources and competencies as highly specific internal factors.

Golfetto and Gibbert proceeded to employ the reasoning in Barney and Aiken (2000) by suggesting that an integration of RBV and marketing may lead to viewing certain marketing processes as special kind of competence. It then follows that the extent to which marketing competencies fulfil the hallmarks of the RBV (value, rarity, immobility on factor markets, and non-substitutability) they are expected to be a key ingredients in competitive advantage and lead to superior performance. We support this idea and argue that this may be extended to networks. Our adoption of this approach appears to be well supported: Firstly, according to Berghman et al. (2006) business marketers seeking to excel in value creation, must display their new value creation potential and track record to stimulate network partners to cooperate. This can be done by sharing competencies. Secondly, Blois and Ramirez (2006) state that there are significant opportunities for firms to establish unique and potentially profitable positions by recognizing that some of the capabilities that they utilize in the creation of their products may themselves be marketable products. Thirdly, Ritter (2006) contributes to the notion of competence-based marketing and suggests a model of firm capabilities and also indicates when to use competence based communication approaches. Finally, according to Golfette

and Gibbert (2006), this work (the resource linkage to firm performance) is commendable since a firm's ability to exploit external knowledge may be considered as a critical component of performance and they accept that a prime source of such external knowledge may reside in the supply network.

Although grounded in RBT, the literature suggests that competencies and capabilities are often used interchangeably and varied. For the purposes of this study we view a competence as an ability to sustain the coordinated deployment of an asset and a capability as an asset – tangible or abstract. This suggests that capabilities and competencies are inherently interconnected. However, we make this distinction to isolate the underlying constructs and facilitate independent analysis. Extending this argument to network competencies and network capabilities enables us to construct our first hypothesis as follows:

H1: *There is a significant positive association between Network Competence and Network Capability.*

*Network competence:*

Network competence is considered to be a company-specific ability to handle, use, and exploit interorganizational relationships (Ritter and Gemünden, 2003, Ritter et al., 2002). This recognises that firms are embedded in networks of cooperative and competitive relations with other organizations (Anderson et al., 1994, Ford et al., 1998, Achrol and Kotler, 1999). Within these networks the interorganizational relationships are long-term arrangements, maintained for some overall functional purpose. However, according to Ritter et al. (2002) there appears to be substantial differences in the ability of firms to deal with networks. This provides further motivation for our research to consider network competence in an emerging market context.

Ritter et al. (2002) noted that the term competence is used to describe resources and preconditions, i.e., qualifications, skills, or knowledge, necessary to perform certain tasks without considering the actual execution of the task - often the pretext of RBT. But, they also recognize competence as a process and incorporate both aspects in their conceptualisation of network competence. Hence, their definition seeks to include both having the necessary knowledge, skills, and qualifications as well as using them effectively. They further distinguish between the tasks that need to be performed in order to manage a company's technological network and (on the other hand) the qualifications, skills, and knowledge that are needed in order to perform these tasks. The latter are referred to as "qualifications". This led Ritter et al. (2002) to describe network competence as an embedded firm construct and the ability to manage in networks is inseparable of the company itself. They extend their argument by also noting that networking is a firm-wide responsibility, limited and supported by the firm's characteristics. This, it is argued, calls for a need for the whole firm to be network-orientated.

Building on the work of multiple authors (Möller and Halinen, 1999, Hakansson and Ford, 2002, Wilkinson and Young, 2002) it is suggested that a distinction between tasks which are relevant to managing a single relationship and tasks which are necessary to manage a portfolio of relationships (a network as a whole) is useful here.

Three different types of *relationship-specific tasks* (initiation of a relationships, exchanging products and services and coordinating dyadic relationships) is supplemented with "adaptations" from both sides of the dyad to contribute to that specific relationship. This seems to be supported in recent research (Fang et al., 2008, Palmatier et al., 2007). For *Cross-relational* tasks Ritter et al. (2002) draw on the widely recognised managerial tasks of planning, organizing, staffing and controlling in general management literature (Wernerfelt, 1989, Witzel, 2002, Lichtenstein and Dade, 2007, Carroll and Gillen, 1987, Fottler, 1981).

For *Network management qualifications*, Ritter et al. (2002) make a distinction between specialist qualifications and social qualifications. *Specialist qualifications* deal with the “technical side of the relationship” and include political, legal economic specialities as well as knowledge about other actors. In turn these include information about the operations of network partners, their staff and resources. *Social qualifications* refer to how people behave in a social setting. These include dimensions such as communication ability, extraversion, conflict management skills, empathy, emotional stability, self-reflectiveness, sense of justice, and cooperativeness. The author note that these are of special interest as the interpersonal interactions and relationships in business relations is very important.

Ritter et al.’s (2002) work reflects the dire need for a refined measurement of network competence capable of being included in research designs to explore other aspects of firm and network behaviour in order to generalize the results in different contexts. Specifically they noted the need for robust measures and tests to understand the impact of network competence on firm performance. We therefore construct our second hypothesis as follows:

*H2: There is a significant positive relationship between Network competence and Firm Performance amongst firms*

#### *Network Capability:*

The idea of firm capabilities in a network context is given more substance by Walter et al. (2005) who conceptualize Network Capability as a higher order construct and define it as a firm’s ability to develop and utilize inter-organizational relationships. Motivated from the CBT (Competence Based Theory) they claim to consider networking ability and not only the existence of a network. In considering the relationship between Network Capability (NCA) and performance of university spin-off firms they observed that NCA strengthens the relationship between entrepreneurial orientation and spin-off performance, and it (NCA) moderates the relationship between entrepreneurial orientation and organizational performance. This led them to conclude that that firms develop their network capability and their networks as a means to improve performance and that NCA is an organization-wide characteristic.

The development of the Network Capability construct is based on the contributions to “alliance capability” (Prashant Kale, 2002), “relational capability” (Lorenzoni and Lipparini, 1999) and “network capability” (Anand and Khanna, 2000). Walter et al. (2005) specifically acknowledge the contribution of RBT in the network capability debate and proposes that the NCA construct consists of four latent dimensions: coordination, relational skills, market knowledge and internal communication. They therefore treat NCA as a composite construct that requires a formative measure because it is regarded as a higher order “resource” that increases in magnitude as each of the four components increases. *Coordination* between collaborating firms is a boundary-spanning activity and connects the firm to other firms to effect mutually supportive interactions. *Relational skills* are viewed as important to the management of relationships because business relationships are often inter-personal. These may include (again) aspects such as communication ability, extraversion, conflict management skills, empathy, emotional stability, self-reflection, sense of justice, and cooperativeness. This is an overlap with the cited social qualifications in the NCO construct. *Partner knowledge* enables “situation-specific management” and includes the reduction of transaction costs, solution oriented conflict management, and it stabilizes a firm’s position where necessary within a network. It is argued (Walter et al., 2005) that this knowledge is a pre-requisite for effective coordination between parties and contributes to the enhancement of internal communication. True to common belief *Internal communication* is central to a relational perspective. It deals with assimilating and disseminating of up-to-date information on partners and their resources as well as agreements with them to avoid redundant processes, miscommunication, and improve the detection of synergies.

In this research (Walter et al., 2005) it was observed that NCA has a key influence on a wide variety of performance measures. Specifically, the authors suggest that this relationship should be considered “more seriously” as NCAs relation to firm performance appears to be significant. In an effort to gauge this relationship more specifically we construct our final hypothesis:

*H3: There is a significant positive relationship between Network Capability and Firm Performance amongst firms.*

The development, maintenance and growth of firm level competencies and capabilities can only make sense if they contribute to competitive advantage (a primary position in RBT) and ultimately contribute to firm performance. Our treatment of firm performance is largely based on the work by Fynes and Voss (2002); Homburg et al. (2004) and Hooley et al. (2005) who supports the use of perceptual measures of firm performance. In addition we followed a qualitative process where experience interviews were conducted with senior executives in business-to-business firms. From these interviews we established that sales growth, customer retention, market share and return on investment (ROI) are the “top-of-mind” measures that managers consider when evaluating firm performance. These results appear to be fairly consistent with the literature (Dess and Robinson Jr., 1984, Venkatraman and Ramanujam, 1987, Naman and Slevin, 1993, Hart and Banbury, 1994, Palmatier et al., 2007). This literature also confirms that perceptual performance measures have been shown to have a high correlation with objective financial performance measures.

Against this background we constructed a conceptual model (Figure 1) where Network Competence (a composite construct consisting of four dimensions) and Network Capability (also a composite construct consisting of four dimensions), is related to a composite measure of firm performance (consisting of four perceptual measures).

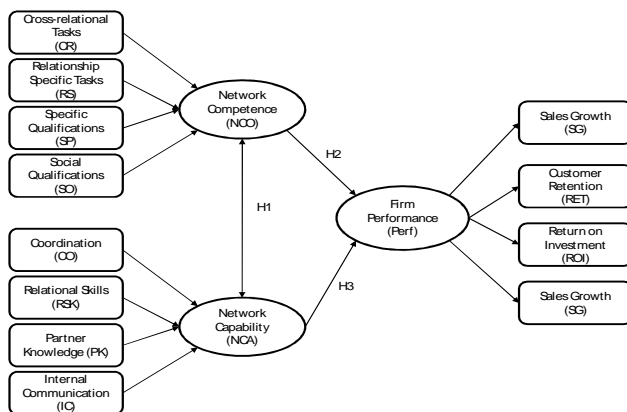


Figure 1: Conceptual model to investigate relationship between NCO, NCA and Firm Performance

## Methodology

In the qualitative phase of the study, eight in-depth interviews were conducted with industrialists from the manufacturing, financial services and property development sectors to obtain (a) their input regarding the scales to be used in the survey, (b) their views regarding performance measurement and (c) their general views regarding the construction of the questionnaire and the data collection methods. Based on these results, a structured survey was distributed via fieldworkers using a multi-informant approach and the sample frame was defined as managers in a South African business-to-

business setting. A non-probability sample amongst 100 firms and 288 respondents yielded 227 (79%) responses from which 8 (4%) of the cases were considered not useful, leaving 219 (76%) questionnaires for analysis. The questionnaire contained the adjusted Network Competence scale (15 items), the Network Capability scale (19 items), four measures of performance (Sales growth, Customer retention, ROI and market share) as well as demographic information about the respondents (managerial discipline, managerial position, age, gender, citizenship and ethnicity) and the firms (for profit versus not-for-profit, ownership, industry classification, number of employees, annual turnover and sales origin) that they represent.

The majority of these firms (95%) are private sector firms, and 77% are purely South African owned, whilst 14% and 7% respectively indicated that they have either “partial” or “full” foreign ownership. In addition, 85% of the firms generate the majority of their business from local markets and 76% view themselves as purely business-to-business firms. These characteristics confirm that the sample is representative of business-to-business firms in South Africa.

Manufacturing (21.5%), construction (11.4%), wholesale trade (19.2%) and financial intermediation (26%) represented the largest industry categories in the sample. Also notable was that respondents from all ten major categories of the South African Standard Industrial Classification were represented in the sample. Firm size was considered through number of employees and annual turnover. The analysis also revealed that small (54% of the firms has less than 100 employees) medium (28% between 100 and 1000 employees), and large (18% has more than 1000 employees) firms were included in the sample. This wide variety of different size firms is also reflected in the annual turnover as 28% of the firms have a annual turnover of less than R10 million, 34% between R10 million and R100 million and 38% more than R100 million.

The respondent profile through managerial discipline (functional area), age, citizenship, ethnicity and gender. As expected the majority (31%) of the respondents were from marketing and sales departments, and 21% indicated that they were general managers with multi-disciplinary responsibilities. In addition another 13% claimed to be from operations management and together these functional areas constitutes 65% of the respondents. The average age of respondents was between 36 and 40 years while 22.4% were older than 51 years of age – suggesting a fairly senior managerial level amongst the respondents. This was confirmed by 50% of the respondents indicating that they are from “top” management, while 36% claimed to be from middle management with only 18% from junior management. Although 94% of the respondents indicated that they are South African as much as 55% of the sample is whites, indicating bias and non-representation of the South African population. This is a limitation of the research, but may well be a reflecting on the true ethnic situation in firms and dictated by a particular history in South Africa. Encouragingly the sample contained 31% females, which was expected to be much lower as men still largely dominate many areas of the South African economy.

## Results

Both the network competence (NCO) and Network Capability scales where subjected to reliability and validity testing through exploratory factor analysis (EFA) using SPSS and confirmatory factor analysis (CFA) using LISREL (Jöreskog and Sörbom, 1993, Jöreskog and Sörbom, 1999). In the case of Network Competence the original 22 items scale (Ritter et al., 2002) was replaced by a refined 15 Item scale that resulted from a study by Human (2007). In that study (N=495) the overall Cronbach Alpha coefficient ( $\alpha$ ) for the refined scale exceeded 0.7 ( $\alpha = 0.874$ ), indicating good reliability, whilst in this study  $\alpha = 0.776$ . In considering validity the exploratory factor analysis (EFA) indicated that only two items yielded weak ( $<0.3$ ) loadings and where eliminated, and the rest of the items all loaded as depicted by the theoretical model. In addition, the KMO measure of

sampling adequacy was above 0.6 (0.702) and the Bartlett's test of sphericity was also satisfactory ( $\chi^2 = 932.401$ ;  $df = 78$ ;  $p = 0.000$ ). This initial analysis suggests that the data generated by the scale is suitable for factor analysis and that 64.5% of the variance was explained by the 4 factors (13 items) namely: Cross-relational tasks (CR), Relationship specific tasks (RS), Special qualifications (SP) and Social qualifications (SO). Using the robust maximum likelihood estimation method the confirmatory factor analysis yielded an acceptable goodness of fit statistic ( $\chi^2 = 108.11$ ;  $df = 59$ ;  $p = 0.000$ ; RMSEA = 0.062).

In the case of the Network Capability (NCA) scale the latent variables Coordination ( $\alpha = 0.819$ ), Relational Skills ( $\alpha = 0.758$ ), Partner Knowledge ( $\alpha = 0.811$ ) and Internal Communication ( $\alpha = 0.713$ ) all demonstrated good ( $\alpha > 0.7$ ) reliability and the overall scale ( $\alpha = 0.886$ ) was considered to be reliable. Similar to NCO the validity of the NCA was also considered through exploratory factor analysis and confirmatory factor analysis. The EFA indicated that one item had a weak factor loading ( $< 0.3$ ) and could be removed from the scale. For NCA the KMO measure of sampling adequacy was above 0.6 (0.832) and the Bartlett's test of sphericity was also satisfactory ( $\chi^2 = 1589.42$ ;  $df = 153$ ;  $p = 0.000$ ). The CFA (also using the robust maximum likelihood estimation method) suggested good construct validity as the 18 items (derived from the original 19 items scale) loaded as expected with no loading weaker than 0.3. In addition the factor structure suggested a reasonable good fit ( $\chi^2 = 266.62$ ;  $df = 113$ ;  $p = 0.000$ ; RMSEA = 0.079). Other fit statistics for this model are: NCP=153.615, NFI=0.884, CFI=0.817, GFI=0.843, and AGFI=0.787.

Given that the scales for NCO and NCA performed as expected and predicted by the theory we therefore conclude that they appear to be distinct constructs each with its own latent variables. In addition, further analysis revealed a correlation between these two independent variables of less than 0.7 ( $r=0.527$ ), suggesting that they can be retained separately (Palant, 2007). Hence, H1 is supported.

The satisfactory results for the measurement of NCO and NCA paved the way for testing the remaining hypothesis that interrogates the structural integrity of the conceptual model. A non-significant ( $p > 0.05$ ), and weak ( $r < 0.29$ ) relationship ( $r=0.264$ ,  $p=0.624$ ) was observed between NCO and the composite measure of performance (consisting of sales growth, customer retention, ROI and market share). This relationship weakens further ( $r=0.236$ ) if ROI is removed from the measurement as it is not considered to be a robust perceptual measurement. These results suggest that H2 is not supported by the data. For the NCA construct ( $r=0.546$ ,  $p=0.000$ ), a strong ( $r > 0.5$ ) and significant ( $p < 0.05$ ) correlation was observed. Hence, H3 is supported, confirming that there is a positive and significant relationship between Network Capabilities and firm performance. The regression (stepwise) analysis also indicated NCO and NCA explained 29.9% ( $R^2 = 0.299$ ,  $p=0.000$ ) of the variance in firm performance which is regarded as significant. However, closer inspection revealed that NCA contributes significantly (22.9% out of the 29.9%) to this variance. This confirms that Network Capabilities (NCA) exhibit the stronger relationship with firm performance. T-values were used to evaluate the relative strength of the paths between variables in the structural model (Figure 2).

This analysis indicated that combined the model achieve a poor fit (RMSEA  $> 0.08$ ), but when NCO and NCA is considered separately an improved fit (NCO:  $\chi^2 = 36.09$ ;  $df = 19$ ;  $p = 0.01029$ ; RMSEA = 0.064 and NCA:  $\chi^2 = 40.80$ ;  $df = 19$ ;  $p = 0.00257$ ; RMSEA = 0.073) it evident. This suggests that the data supports the notion that NCO and NCA have an influence on firm performance. However, from figure 2 it is clear the path between NCO and Firm Performance is not significant ( $t < 1.96$ ). These results support that of the earlier regression analysis and it points at the limited relationship between NCO and firm performance. Hence, the support for H3 and rejection of H2 is confirmed.

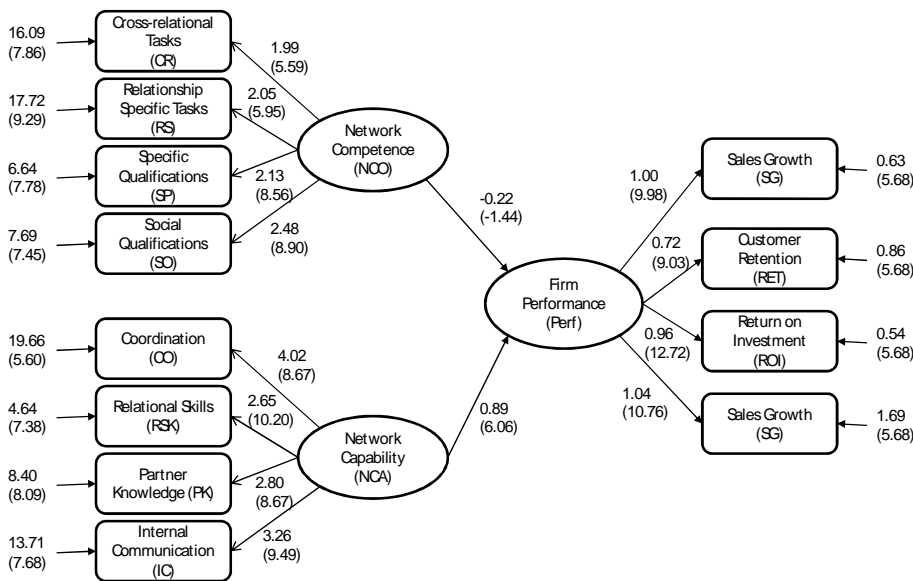


Figure 2: Estimates and t-values (in parenthesis) for structural model ( $\chi^2 = 124.86$ ;  $df = 51$ ;  $\rho = 0.00000$ ; RMSEA = 0.082)

## Discussion

Our research indicates that the data supports the underlying dimensions of both the network competence scale and the network capability scale as proposed in the literature. Moreover, both the scales exhibit significant reliability and construct validity, suggesting its usefulness to measure the unobserved construct. However, although the notion of competence-based competition is well documented and supported by the RBT literature, support for network competence appears limited. Also, network competence seems to be joined at the hip with network capabilities. This was evident when latent variables were freed to cross-load in the model. More specifically it appears that the dimension named “social qualifications” in the network competence scale and the “relational skills” dimension in the network capability scale might share conceptualisation. We believe that this should be the subject of further investigation as the social dimension of networks is well recognized and documented (Teck-Yong, 2005, Moller and Rajala, 2007). We also contend that both scales may benefit from such a refinement.

Importantly, network competence was observed to have a positive, but weak and insignificant, correlation with firm performance. This observation needs to be subjected to more rigorous analysis, as it may have profound implications for future research in this area. Network competence was originally proposed as an embedded construct (Ritter et al., 2002), and given this observation and the cited overlap with network capabilities, it appears to suggest that network competence may well be treated as a moderating or mediating construct.

The positive and significant relationship between network capabilities and firm performance supports the results obtained from studies in other parts of the world (Walter et al., 2005). Our result in this regard strongly suggests the network capabilities needs to be the focus of managerial attention if the firm seeks to enhance its ability to manage in complex networks. The advantage that may be derived from increased network capability is bound to have a positive effect on performance. Various authors (Kale et al., 2002, Han et al., 1998, Walter et al., 2005) supports this by noting that NCA, as a firm-level concept that promotes network-oriented behaviour, can support superior performance by

disseminating information throughout the organization and within the supplier network. In addition high NCA firms may be better able to anticipate new preferences, are more aware of competitors' actions, and can develop new value propositions more rapidly. Particularly, the potential benefits of network capability to enhance time-to-market processes for new innovations (Walter et al., 2005) seems very attractive.

### **Limitations, future research and implications for management**

Although our research demonstrates the usefulness of the network competence and network capability scales in emerging economy environments, its ability to draw conclusions regarding the business-to-business population in these markets is limited by its exploratory nature. Also, other notable restrictions are the non-probability sample used in this study, the non-longitudinal design of the study, the within-country ethnic bias of the sample, and most importantly, the limitations that is associated with the specific perceived measures of firm performance employed in this study. Future research should seek to construct a more robust model to consider the causal relationship between network capabilities and organisational performance. Specifically, the drivers of relationship quality in a network context should contribute to our understanding of the linkages between network relationships and network performance.

Based on our results we suggest that firm performance in a network context may be enhanced by managerial attention to (a) better coordination between actors in the network, (b) the development of relational skills amongst actors in the network, (c) increased partner knowledge across organisations, and (d) increased quality of inter-firm communications. These dimensions were positively correlated with perceived measures of firm performance and should yield positive returns on managerial investment.

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